

Attorney's Docket No.:10559-535001

Amendment to the Claims:

This listing of claims replaces all prior versions, and listings, of claims in the application:

1. (currently amended) A processing system that executes multiple instruction contexts comprising:

an instruction memory for storing instructions that are executed by the system;

a processor unit for executing instructions in a pipelined fashion;

a plurality of context registers for storing instructions and instruction addresses for contexts awaiting execution; and

fetch logic for selecting an address from one of said plurality of context registers and for selecting an instruction from a second of said plurality of context registers for execution by said processor unit, with the fetch logic selecting the address and the instruction substantially simultaneously for each a first cycle of execution of said processor unit.

2. (original) The system of claim 1 wherein said processor unit outputs control information related to the execution of an instruction, and said fetch logic selects a third of said plurality of context registers for input of the control information substantially simultaneously with the selection of

Attorney's Docket No.:10559-535001

the address and the instruction in each cycle of execution of said processor unit.

3. (original) The system of claim 2 wherein the fetch logic selects a different one of said plurality context registers in a round robin manner during each corresponding, successive cycle of execution of said processor.

4. (original) The system of claim 3 wherein the control information includes an indication that a branch instruction was executed by a previous context and the control information also including an instruction address of a branch taken.

5. (original) The system of claim 3 wherein the control information includes an indication that a branch instruction was executed by a previous context and the control information also including an instruction address of a branch not taken.

6. (original) The system of claim 3 wherein the control information includes an indication that a subroutine instruction was executed by a previous context and the control information includes an instruction address of subroutine.

7. (original) The system of claim 4 further comprises:

Attorney's Docket No.:10559-535001

scheduling logic that schedules execution of the contexts by storing an instruction address for a context ready for execution in an available one of said plurality of context registers.

8. (original) The system of claim 7 wherein the control information is also input to said scheduling logic, the control information including an indication that a context exit instruction was executed by a first context.

9.(original) The system of claim 8 wherein said scheduling logic stores a context instruction address for a second context into an available one of said plurality of context registers based on the indication that a context exit instruction was executed by the first context.

10. (currently amended) A method of operating a processing system, the method comprising:

scheduling a plurality of contexts to be executed by said system, said scheduling comprises:

storing an instruction address for each of said plurality of contexts in a corresponding one of a plurality of context registers;

Attorney's Docket No.: 10559-535001

selecting a first instruction address from a first of said plurality of context registers and ~~a first~~ an instruction from a ~~first~~ and second of said plurality of context registers in a first cycle of execution of the system; and

selecting a second instruction address from the second of said plurality of registers and a ~~second~~ different instruction from a third of said plurality of registers in a second cycle of execution of the system.

11. (original) The method of claim 10 further comprises:
storing control information in one of said plurality of context registers in each cycle of execution of the system.

12. (original) The method of claim 11 further comprises:
determining a branch taken instruction address based on the execution of a previous instruction by the system; and
storing the branch taken address in one of the plurality of context registers.

13. (original) The method of claim 11 further comprises:
determining a branch not taken instruction address based on the execution of a previous instruction by the system; and
storing the branch not taken instruction address in one of the plurality of context registers.

Attorney's Docket No.:10559-535001

14. (original) The method of claim 11 further comprises:
determining a subroutine instruction address based on the
execution of a previous instruction by said system; and
storing the subroutine address in one the plurality of
context registers.

15. (original) The method of claim 11 wherein said
scheduling further comprises:
determining that a context exit instruction was executed
from a first one of said context registers;
storing an instruction address for a new context in the
first one of said context registers.

16. (original) A computer program stored in a computer
readable medium having instructions causing a computer that
executes multiple contexts to:
store an instruction address in each of a plurality of
context registers;
load a first instruction corresponding to a first
instruction address stored in one of the plurality of context
registers;
select the first instruction for execution in a first cycle
of execution of said computer; and

Attorney's Docket No.:10559-535001

load a second instruction corresponding to a second instruction address stored in a second of the plurality of context registers substantially simultaneously with the selection of the first instruction.

17. (original) The computer program of claim 16 further comprising instruction causing a computer that executes multiple contexts to:

determine control information related to the execution of a previous instruction in each cycle of execution of the computer; and

store the control information in a one of the plurality of context registers substantially simultaneously with the selection of the first instruction.

18. (original) The computer program of claim 17 further comprising instructions causing a computer that executes multiple contexts to:

determine whether a branch is taken as the result of the execution of the previous instruction; and

store a branch taken instruction address in one of the plurality of context registers.

Attorney's Docket No.:10559-535001

19. (original) The computer program of claim 17 further comprising instructions causing a computer that executes multiple contexts to:

determine whether a branch is not taken as the result of the execution of the previous instruction; and

store a branch not taken instruction address in one of the plurality of context registers.

20. (original) The computer program of claim 17 further comprising instructions causing a computer that executes multiple contexts to:

determine a subroutine address as the result of the execution of the previous instruction; and

store the subroutine address in one of the plurality of context registers.

21. (original) The computer program of claim 17 further comprising instructions causing a computer that executes multiple contexts to:

determine whether the previous instruction from a first one of the plurality of context registers was a context exit instruction; and

store a new context instruction address in the first one of the plurality of context registers.